

## Report for 2003AZ22B: Information Transfer

- Book Chapters:
  - Sprouse, Terry W. and Lisa Farrow Vaughn. 2003. Water Resource Management in Response to El Niño-Southern Oscillation (ENSO) Droughts and Floods: The Case of Ambos Nogales, Chapter 6 in Climate, Water, and Transboundary Challenges in the Americas, edited by Henry F. Diaz and Barbara J. Morehouse (The Netherlands: Kluwer Academic Publishers).
- Conference Proceedings:
  - Jacobs, Katharine and Barbara Morehouse. 2003. Improved Drought Planning for Arizona, in Proceedings of the University of Colorado Natural Resources Law Center conference on Water, Climate and Uncertainty: Implications for Western Water Law, Policy and Management. June 11-13.
- Other Publications:
  - Gelt, Joe. 2003. Perchlorate Emerging as a Likely Arizona Water Quality Issue. Arizona Capitol Times, November-December.
  - Gelt, Joe. 2003. Fire and Drought Aid Recovery of Native Species, Arizona Capitol Times, July-August.
  - Jacobs, Katharine. 2003. Planning Climate and Global Change Research: A Review of the Draft U.S. Climate Change Science Program Strategic Plan (Committee Report). National Research Council, National Academy Press.
  - Jacobs, Katharine and Roger Pulwarty. 2003. Water Resource Management: Science, Planning and Decision-Making, in Water: Science, Policy and Management, Water Resources Monograph 16, American Geophysical Union, December.
  - Megdal, Sharon. 2004. Securing Sustainable Water Supplies in Arizona, Paper prepared for IDS0Water 2004 On-line Conference with approximately 10,000 registrants.
  - Megdal, Sharon. 2003. Fiscal 2000 Committee Report Was Accurate, Arizona Capitol Times, May 2.
  - Megdal, Sharon. 2003. How Water Management in Tucson, Arizona Has Affected the Desert's Landscape. Paper based on presentation made at the Urban Design in Arid Zones Symposium. Santiago, Chile (On-line paper at <http://www.ag.arizona.edu/AZWATER/presentations/mwdl.pdf> ).
  - Megdal Sharon and Jackie Moxley. 2003. Managing to Avoid Crisis: A Look at Water Management Efforts in Rural Arizona. Arizona Review, Fall.
- Articles in Refereed Scientific Journals:
  - Sprouse, Terry W. 2003. Equitable Management of Mexican Effluent in Ambos Nogales, Journal of the Southwest 45 (3).

Report Follows

# Information Transfer

## Introduction

The University of Arizona's Water Resources Research Center continues its involvement in water policy research and analysis and in information transfer activities, such as publications, conferences, lectures, seminars, and other formats to inform and educate water professionals, elected and appointed officials, students and the public.

In October 2003, the Center welcomed the addition of Kathy Jacobs to its ranks as an associate specialist. Along with her WRRC position, Jacobs also serves as associate staff scientist at the UA Institute for the Study of Planet Earth. She left the Arizona Department of Water Resources after 21 years, having served for 14 years as the Tucson Active Management Area director.

## Outreach and Education

The WRRC places great importance in utilizing its experience and expertise to be actively involved in statewide water issues. Water Center staff reaches out to the community through presentations and lectures, service on boards, committees and panels, written articles and research activities. Applied research serves as a foundation for outreach and education.

In particular, Associate Director, Sharon Megdal, and Kathy Jacobs have both made numerous presentations on topics related to water management, drought planning, climate and rural water resources issues to audiences ranging from undergraduate classes to keynote addresses at conferences. Megdal and Jacobs are both significantly involved in writing the background report for the upcoming Arizona Town Hall on water.

In 2003 Sharon Megdal made many presentations within Arizona. Groups addressed by Megdal included the Arizona Hydrological Society, Agribusiness groups and rural watershed organizations. She has given presentations as far away as Torreón, Coahila, Mexico, and Santiago, Chile. Megdal gave interviews to the radio and television media in Tucson and Phoenix, and writes a regular column for the WRRC *Arizona Water Resource* newsletter. Megdal also served on the Arizona Water Quality Appeals Board. Sharon Megdal has been named Director of the WRRC, effective July 1, 2004.

Kathy Jacobs is a lead staff person developing Arizona's first drought plan in cooperation with the Arizona Department of Water Resources and the Climate Assessment for the Southwest. Jacobs serves as chair of the Education and Outreach Committee of the University's Water Sustainability Program, linking four water centers and enhancing connections between University research activities and stakeholders. Jacobs has been involved in two National Academy panels over the past two years.

WRRC researcher, Terry Sprouse, received a Fulbright Grant to study bi-national effluent management in Nogales, Sonora and Nogales, Arizona. The study is titled "Developing options for equitable management of Mexican effluent in Ambos Nogales." The use of effluent is a strategy to increase the quantity of available water for both countries. Resolving the issue of Mexican effluent use has broad implications for long-term watershed management in that region.

The WRRC is also represented on the International Boundary and Water Commission's (IBWC) Southeast Arizona Citizen's Forum, Board of Directors. The Forum is a link between the border communities and the IBWC to promote public input on IBWC projects, and to inform the public of upcoming projects. Meetings by the IBWC are held in different border communities on a quarterly basis.

The Center's Brown Bag Luncheon Seminar Series provides a forum for university personnel and other experts from around the state. Of the six seminars presented in 2003-2004, the panel on the "San Pedro Partnership" was particularly well attended and received. This seminar addressed a multitude of front-page issues in Southeastern Arizona. These issues included surface water-groundwater interface, military base closure, sharing of transboundary water resources and "economic development vs. water conservation" issues.

The "Arizona Water Resource" newsletter is published six times per year. With a mail circulation of over 2,400 people, the 12-page newsletter focusing on Arizona state and regional water issues is distributed free of charge. A feature story, guest view, public policy column and other shorter features are included. Feature articles in the newsletter for the past year addressed prominent topical issues, such as "source tracking" of waterborne pathogens, desalinization of saline water, Navajo water rights, and perchlorate in Arizona groundwater, to mention a few. Editor, Joe Gelt, had two of his newsletter articles and three of his "Guest View" columns re-published in *the Arizona Capital Times*.

A valuable addition to the acclaimed "Arizona Water Resource" newsletter began in 2004 with the inclusion of supplements inserted in the newsletter. These supplements provide important information about the water research and programs of outside agencies. USGS provided the first outside agency supplement, entitled, "Effects of Natural and Human Factors on Stream Water Quality in Central Arizona." The supplement was published in the January-February 2004 issue of "Arizona Water Resource."

The WRRC web site provides access to the newsletter and to other WRRC papers. It is updated regularly to include presentations made by WRRC faculty, who are in great demand as speakers within Arizona, nationally and internationally. Annual reports from 104B funded research projects are posted on the web page. The web site includes links to many state and national water related web sites, including the NIWR homepage.

The WRRC hosted the 2004 Spring Semester sabbatical of Professor George Frisvold from the Department of Agricultural and Resource Economics at the University of Arizona. His research included examining the intricate aspects of measuring water use in agriculture. Dr. Frisvold also worked actively with the WRRC on preparations for the 2004 WRRC water conference.

The Water Conservation Alliance of Southern Arizona (CASA), an independent organization housed at the WRRC, is a consortium of small water utilities. Water CASA is developing a database to analyze existing conservation measures, study the actual amount of water saved from a given conservation measure, and perform a cost benefit analysis and cost effectiveness analysis on each measure. The research focuses on water conservation efforts within the Southwest, which faces water demand dilemmas brought on by drought, rapid urban growth, and water supply shortages in the region.

## Second Year of TRIF Grant Proposals Received

Part of the recent growth of the WRRC was made possible through new funding from the University. In the November 2000 general election, voters passed Proposition 301, which provided an increase of 0.6% in sales taxes to support education. Ten percent of the new sales tax money was allocated to the three State Universities in Arizona. The president of the University of Arizona selected seven areas on campus to receive TRIF funds. Based on the University's strength in nearly all facets of water resources, the president decided that water would be one of the four specific research areas to be strengthened with Proposition 301 money. For fiscal years beginning July 1, 2002 and 2003, \$500,000 was allocated to the Proposition 301 water program, with the amount increasing gradually to \$3,500,000 per year in the fifth year of the program. The Arizona Board of Regents designated this money as the Technology and Research Initiative Fund (TRIF).

The money allocated to the water area is co-managed by the directors of four campus water centers, the Dean of the College of Agriculture and Life Sciences, and the Vice President for Research, Graduate Education and Economic Development. The WRRC is collaborating with three-NSF funded water centers on this program. The three other centers are focused on water sustainability in semi-arid regions, water quality and high quality water for manufacturing, respectively. Between \$100,000 and \$115,000 is allocated each year to each of the four water centers. Starting in FY04 a \$1,000,000/year competitive grants program in water research, outreach and education was initiated. In addition to the grants program, a \$100,000 fellowship program for graduate and undergraduate students was initiated. An external advisory committee, consisting of water industry leaders from the private and public sectors, provides guidance to the program.

The Prop 301 water program is now called Water Sustainability Program. WRRC has played a central role in implementing the Water Sustainability Program and in developing and managing the grants and fellowship programs, and will continue to do so. Expectations are that the program will continue to be funded by the Arizona Board of Regents after the first five-year funding cycle ends on June 30, 2006. This will allow the

four centers and the large U of A water community to continue to expand its water resources research, education and outreach.

In 2003, 21 proposals were funded by \$1,000,000 in TRIF funding. The projects involve 54 UA primary investigators from four colleges, and 19 departments/schools/units across campus. Seventy-two entities are listed as partners, including schools and school districts, municipal, county, state and federal government agencies, private sector companies and other associations. Over \$300,000 was been secured from off campus as direct dollar matches. The WRRC hosted six of the Water Sustainability grants. The titles of the hosted grants were:

1. "Evaluation of M & I Water Conservation Measures Through Actual Water Savings & Cost/Benefit Analysis;"
2. "Know Your Water: Manual of Water Quality and Treatment for the Home Owner;"
3. "The Water Wagon: A Mobile Laboratory and Education Center;"
4. "Arizona Water and Pesticide Safety;"
5. "Tailored Drought Planning for Arizona;"
6. "Improved Turf and Landscape Irrigation Management for Northern Arizona."

WRRC researcher, Jackie Moxley, was a collaborator on the project, "Know Your Water: Manual of Water Quality and Treatment for the Home Owner."

In January 2004, the University of Arizona Water Sustainability Program received 48 new proposals for year two of the competitive grants program under TRIF. Research utilizing the state tax funds is expected to attract additional matching support from the private and public sectors. It was estimated that \$420,000 would be available for new grants in FY 2004.

## Water Briefing for State Legislators and Public Officials

As part of the University of Arizona's Water Sustainability Program, the WRRC organized a briefing on water for Arizona Legislators and other invited agency guests. The successful program was held on March 23, 2004 in Phoenix. Educational briefings were provided by Sharon Megdal and Kathy Jacobs. WRRC Project WET Director, Kerry Schwartz, was a member of a panel of experts who provided an overview of their water programs. Dr. Megdal provided an overview of state water issues at a special session of the Navajo County Board of Supervisors. She has been invited to organize a session on water for the annual meeting of the Arizona League of Cities and Towns.

## Project WET

The WRRC's Project WET (Water Education for Teachers) increased its efforts to provide water education to teachers through in-service workshops. This statewide K-12 program encourages the use of a water education curriculum within classrooms. Project WET also offers teachers new teaching methods and skills promoting inquiry-based teaching and problem solving, team building, critical thinking and group decision-making techniques. Presently WRRC has two full time Water Educators, one housed at the WRRC in Tucson, and a second Educator housed with Cooperative Extension in Phoenix and funded with TRIF funds.

The two water educators from WRRC train facilitators who in turn train teachers in two-day workshops all over the state. At present the Project has 90 volunteer facilitators giving workshops for K-12 teachers. Thus, through this multiplying effect, many thousands of students are educated about water each year.

## Project WET Water Festival

This year, Project WET conducted, not one, as was done in previous years, but two Arizona Water Festivals, on Sept. 26, 2003 National Water Education Day. One festival was conducted in a metropolitan area and the second in a rural area. Project WET-coordinated water festivals are an annual occurrence. The 2003 dual event was the fourth in a series.

Water festivals are exercises in water creativity, with participants expanding their awareness of the uses, value and importance of water. But above all, water festivals are fun as well as educational, as students and their teachers participate in interactive water activities and demonstrations. Participants gain an increased appreciation of water in its varied uses and come away with a better understanding of an ethic of stewardship for preserving and protecting the state's water resources.

One of the two festivals was held in Surprise, Arizona at the Surprise Recreation Campus and involved about 1,000 fourth-grade students from the western part of the Phoenix Metropolitan Area. The Surprise festival was a collaborative effort, with the U.S. Bureau of Reclamation, Salt River Project, Arizona Department of Water Resources Phoenix AMA, Arizona Department of Environmental Quality, Central Arizona Project and the cities of Surprise and Peoria working with Project WET to ensure the success of the festival.

A water festival was also conducted on the same day in Safford. The event involved about 600 fourth grade students, from local rural Graham County Schools. Sponsors of the event included the U.S. Bureau of Reclamation, Arizona Department of Environmental Quality, Gila Resources and Valley Telecom. Gila Resources and the UA Safford Agricultural Center assisted Project WET in coordinating the event.

Project WET director, Kerry Schwartz, serves on the Project WET USA Council, and serves on the steering committee for new the new teachers guide, “Discover a Watershed – The Colorado.”

## Annual Water Conference

The Annual Water Conference continued to extend the WRRC’s outreach with a highly successful program in 2003. The conference was expanded from its one-day format to two-days and was held in a non-urban area of the state. Titled “Local Approaches to Resolving Water Resource Issues,” the conference brought together people actively engaged in resolving water resource issues from all over the state. Participants’ expertise in solving problems was woven into the conference, which had the subtitle, “What’s Working, What Hasn’t Worked and Building on Existing Efforts.”

Two key ideas that developed throughout the conference presentations as major conference themes were: (1) diverse problems call for diverse solutions, with no single remedy fitting all situations and (2) involve all interested individuals and parties when addressing an issue. Media coverage of the event was encouraging, and conference attendees included about 200 people from more than 40 Arizona communities.

The WRRC newsletter provided both pre-conference information and post-conference results and commentary. A newsletter article written after the 2003 conference presented an exposition and summary of lessons learned from the conference. The article was oriented to local and regional approaches to water management in Arizona, and was specifically directed to the lay reader. Dr. Megdal examined some of the practical applications that emerged from the conference in her monthly newsletter column. Also, Megal and Jackie Moxley authored an article in the *Arizona Review* with information gleaned from the conference.

Planning for the 2004 WRRC Conference was done in late 2003 and early 2004. An innovative aspect of the preparation for the 2004 Conference was the preparation of background, written materials, which involved substantial new information and analysis. These new materials, which involved USGS in the effort, were posted on the WRRC web site after the April 28, 2004 conference on The Future of Agricultural Water Use in Arizona. Over 250 people registered for the 2004 conference.